PIC-32 Pinguino OTG Connector/Function/IC Pin Cross Reference Table

PIC32-Pinguino OTG Rev C board connectors				Pinguino Function		digitalw.c				PIC32 Port	Microchip PIC32MX3XX/4XX Data Sheet 61143H Table 1-1		
				Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description
		CON1 POWER	A6		Analog input 6	Pin 20	1	0x800	11	RB11	24	RB11	PORTB is a bidirectional I/O port.
												AN11	Analog input channel 11
												TDO	JTAG test data output pin
												PMA12	Parallel Master Port Address etc
			A7		Analog input 7	Pin 21	1	0x400	10	RB10	23	RB10	PORTB is a bidirectional I/O port.
												AN10	Analog input channel 10
												TMS	JTAG Test mode select pin
												CVREFOUT	Comparator Voltage Reference Output
												PMA13	Parallel Master Port Address etc
ICSP	1		RST	External reset (active low)							7	MCLR	Master Clear (Reset) input. This pin is an active-low Reset to the device.
			3V3	Regulated 3V3 positive lead							10/26/38/57	VDD	Positive supply for peripheral logic and I/O pins (see also IC Pin 57 below)
			5V	Regulated 5V positive lead									
			GND	Common ground							9/25/41	Vss	Ground reference for logic and I/O pins
			GND	Common ground							9/25/41	Vss	Ground reference for logic and I/O pins
			VIN	External input power (9-24 Vcc)									

Note: This table has been compiled from information contained in a number of sources including the Olimex PIC32 Pinguino OTG User Manual, various Pinguino library files, the Microchip PIC32MX3XX/4XX Data Sheet 61143H etc. Whilst it is hoped that this table will be useful to anyone using the particular board it is provided without any warranty, expressed or implied, as to the correctness of the information contained in it.

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				Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description
		CON2 ANALOG	A0	Input/Output 14	Analog input 0	Pin 14	1	0x02	1	RB1	15	RB1	PORTB is a bidirectional I/O port.
												AN1	Analog input channel 1
												CN3	Change notification input 3
												PGEC1	Clock input pin for programming/ debugging communication channel 1
												VREF-	Analogue voltage reference (low) input
												CVREF-	Comparator Voltage Reference (low)
			A1	Input/Output 15	Analog input 1	Pin 15	1	0x04	2	RB2	14	RB2	PORTB is a bidirectional I/O port.
												AN2	Analog input channel 2
												CN4	Change notification input 4
												C2IN-	Comparator 2 Negative Input
												SS1	SPI1 slave synchronization or frame pulse I/O.
			A2	Input/Output 16	Analog input 2	Pin 16	1	0x08	3	RB3	13	RB3	PORTB is a bidirectional I/O port.
												AN3	Analog input channel 3
												CN5	Change notification input 3
												C2IN+	Comparator 2 Positive Input
			A3	Input/Output 17	Analog input 3	Pin 17	1	0x10	4	RB4	12	RB4	PORTB is a bidirectional I/O port.
												AN4	Analog input channel 4
												CN6	Change notification input 6
												C1IN-	Comparator 1 Negative Input
UEXT	6		A4	Input/Output 18	Analog input 4 (via 33R resistor - see below) SDA I²C data line	Pin 18	3	0x200	9	RD9	43	RD9	PORTD is a bidirectional I/O port.
												IC2	Capture input 2.
												INT2	External interrupt 2.
												U1CTS	UART1 clear to send.
												SDA1	Synchronous serial data input/output for I2C1
	5		A5	Input/Output 19	Analog input 5 (via 33R resistor - see below) SCL I²C clock line	Pin 19	3	0x400	10	RD10	44	RD10	PORTD is a bidirectional I/O port.
												IC3	Capture input 3.
												INT3	External interrupt 3.
												SCL1	Synchronous serial clock input/output for I2C1
												PMA15	Parallel Master Port Address etc
												PMCS2	Parallel Master Port Chip Select 2 Strobe

Note/ Warning: IC Pins 43 & 21 are connected on the board via a 33R resistor. Similarly IC Pins 44 & 22 are connected on the board via a 33R resistor.
IC Pins 21 and 22 are the actual inputs to AN8 and AN9, the IC ADC inputs, used for Analog input 4 and Analog input 5 respectively.
If Analog input 4 is used Port RD9 should not be addressed directly. Similarly if Analogue input 5 is used Port RD10 should not be addressed directly.

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PIC32-Pinguino OTG Rev C board connectors				Pinguino Function		digitalw.c				PIC32 Port	Microchip PIC32MX3XX/4XX Data Sheet 61143H Table 1-1		
				Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description
			AREF	Postive lead of the analog reference for analog input			1	0x01	0	*RB0*	16	RB0	PORTB is a bidirectional I/O port.
												AN0	Analog input channel 0
												CN2	Change notification input 2
												CVREF+	Comparator Voltage Reference (high)
												PMA6	Parallel Master Port Address etc
												PGED1	Data I/O pin for programming/ debugging communication channel 1
												VREF+	Analogue voltage reference (high) input
			GND	Common Ground of the board							9/25/41	Vss	Ground reference for logic and I/O pins
UEXT	9	CON5 DIGITAL	D13	Input/Output 13	SPI CLK clock from the SPI module LED1 (Green) the onboard user LED is wired to this pin	Pin 13	6	0x40	6	RG6	4	RG6	PORTG is a bidirectional I/O port.
												CN8	Change notification input 8
												SCK2	Synchronous serial clock input/output for SPI2.
												PMA5	Parallel Master Port Address etc
	7		D12	Input/Output 12	SPI IN data input from the SPI module MISO	Pin 12	6	0x80	7	RG7	5	RG7	PORTG is a bidirectional I/O port.
												CN9	Change notification input 9
												SDI2	SPI2 data in.
												PMA4	Parallel Master Port Address etc
	8		D11	Input/Output 11	SPI OUT data output from the SPI module MOSI	Pin 11	6	0x100	8	RG8	6	RG8	PORTG is a bidirectional I/O port.
												CN10	Change notification input 10
												SDO2	SPI2 data out.
												PMA3	Parallel Master Port Address etc
			D10	Input/Output 10	Select SPI select pin for the SPI module	Pin 10	6	0x200	9	RG9	8	RG9	PORTG is a bidirectional I/O port.
												CN11	Change notification input 11
												SS2	SPI2 slave synchronization or frame pulse I/O.
												PMA2	Parallel Master Port Address etc
			D9	Input/Output 9		Pin 9	1	0x4000	14	RB14	29	RB14	PORTB is a bidirectional I/O port.
												AN14	Analog input channel 14
												U2RTS	UART2 ready to send.
												PMA1	Parallel Master Port Address etc
												PMALH	Parallel Master Port Address Latch Enable high-byte (Multiplexed Master modes).
			D8	Input/Output 8	Select SD-CARD - used as the select pin for the SD-CARD reader	Pin 8	1	0x2000	13	RB13	28	RB13	PORTB is a bidirectional I/O port.
												AN13	Analog input channel 13
												TDI	JTAG test data input pin
												PMA10	Parallel Master Port Address etc

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PIC32-Pinguino OTG Rev C board connectors		Pinguino Function		digitalw.c				PIC32 Port	Microchip PIC32MX3XX/4XX Data Sheet 61143H Table 1-1		
		Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description
CON4 DIGITAL	D7	Input/Output 7		Pin 7	3	0x800	11	RD11	45	RD11	PORTD is a bidirectional I/O port.
										IC4	Capture input 4.
										INT4	External interrupt 4.
										PMA14	Parallel Master Port Address etc
										PMCS1	Parallel Master Port Chip Select 1 Strobe
	D6	Input/Output 6	RTCC alarm output	Pin 6	3	0x100	8	RD8	42	RD8	PORTD is a bidirectional I/O port.
										IC1	Capture input 1.
										INT1	External interrupt 1.
										RTCC	Real-Time Clock Alarm Output
	D5	Input/Output 5		Pin 5	3	0x80	7	RD7	55	RD7	PORTD is a bidirectional I/O port.
										CN16	Change notification input 16.
	D4	Input/Output 4		Pin 4	3	0x40	6	RD6	54	RD6	PORTD is a bidirectional I/O port.
										CN15	Change notification input 15.
	D3	Input/Output 3		Pin 3	3	0x20	5	RD5	53	RD5	PORTD is a bidirectional I/O port.
										CN14	Change notification input 14.
										PMRD	Parallel Master Port Read Strobe
	D2	Input/Output 2	BUT Onboard user button is wired on this pin PWM 2 Pulse width modulation output 2.	Pin 2	3	0x01	0	RD0	46	RD0	PORTD is a bidirectional I/O port.
										OC1	Output Compare output 1.
										INT0	External interrupt 0.
					(0x10)	(4)		RD4	52	RD4	PORTD is a bidirectional I/O port.
										CN13	Change notification input 13.
										IC5	Capture input 5.
										OC5	Output Compare output 5.
										PMWR	Parallel Master Port Write Strobe
	D1	Input/Output 1	TX transmit pin for the UART module (serial) PWM 1 Pulse width modulation output 1	Pin 1	3	0x08	3	RD3	51	RD3	PORTD is a bidirectional I/O port.
										OC4	Output Compare output 4.
										U1TX	UART1 transmit.
	D0	Input/Output 0	RX receive pin for the UART module (serial) PWM 0 Pulse width modulation output 0	Pin 0	3	0x04	2	RD2	50	RD2	PORTD is a bidirectional I/O port.
										OC3	Output Compare output 3.
										U1RX	UART1 receive.

Note/ Warning: IC Pins 46 & 52 are connected on the board - if RD0 or RD4 are being addressed directly and either is used as an output the other port **must** be set, and remain set, as an input.
The pinmask/bit details for Port RD4 (in brackets above) are only included for information and are not included in digitalw.c.
From Pinguino IDE trunk r.205/r207 (the first versions to include the PIC32 Pinguino OTG board) through to trunk r255 (the latest version when this table was last edited) digitalw.c uses port RD0 for D2 and pwm.c, which uses OC1 on IC Pin 46, makes sure that port RD4 is set as an input.

PIC-32 Pinguino OTG Connector/Function/IC Pin Cross Reference Table

PIC32-Pinguino OTG Rev C board connectors				Pinguino Function		digitalw.c				PIC32 Port	Microchip PIC32MX3XX/4XX Data Sheet 61143H Table 1-1		
				Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description
		CON3	1	Input/Output 22		Pin 22	4	0x01	0	RE0	60	RE0	PORTE is a bidirectional I/O port.
												PMD0	Parallel Master Port Data or Address/Data
			2	Input/Output 23		Pin 23	4	0x02	1	RE1	61	RE1	PORTE is a bidirectional I/O port.
												PMD1	Parallel Master Port Data or Address/Data
			3	Input/Output 24		Pin 24	4	0x04	2	RE2	62	RE2	PORTE is a bidirectional I/O port.
												PMD2	Parallel Master Port Data or Address/Data
			4	Input/Output 25		Pin 25	4	0x08	3	RE3	63	RE3	PORTE is a bidirectional I/O port.
												PMD3	Parallel Master Port Data or Address/Data
			5	Input/Output 26		Pin 26	4	0x10	4	RE4	64	RE4	PORTE is a bidirectional I/O port.
												PMD4	Parallel Master Port Data or Address/Data
			6	Input/Output 27		Pin 28	4	0x20	5	RE5	1	RE5	PORTE is a bidirectional I/O port.
												PMD5	Parallel Master Port Data or Address/Data
			7	Input/Output 28		Pin 28	4	0x40	6	RE6	2	RE6	PORTE is a bidirectional I/O port.
												PMD6	Parallel Master Port Data or Address/Data
			8	Input/Output 29		Pin 29	4	0x80	7	RE7	3	RE7	PORTE is a bidirectional I/O port.
												PMD7	Parallel Master Port Data or Address/Data
			9	Input/Output 30 (digitalw.c updated in trunk r240)	LED2 (yellow) the onboard user LED is wired to this pin	Pin 30	3	0x02	1	RD1	49	RD1	PORTD is a bidirectional I/O port.
												OC2	Output Compare output 2
												U1RTS	UART1 ready to send.
			10	Input/Output 31		Pin 31	5	0x02	1	RF1	59	RF1	PORTF is a bidirectional I/O port.
UEXT	3		11							RF5	32	RF5	PORTF is a bidirectional I/O port.
												CN18	Change notification input 18.
												U2TX	UART2 transmit.
												SCL2	Synchronous serial clock input/output for I2C2
												PMA8	Parallel Master Port Address etc
			12							RB12	27	RB12	PORTB is a bidirectional I/O port.
												AN12	Analog input channel 12
												TCK	JTAG test clock input pin
												PMA11	Parallel Master Port Address etc
UEXT	4		13							RF4	31	RF4	PORTF is a bidirectional I/O port.
												CN17	Change notification input 17.
												U2RX	UART2 receive.
												SDA2	Synchronous serial data input/output for I2C2
												PMA9	Parallel Master Port Address etc
			14	VIN									
			15	GND							9/25/41	Vss	Ground reference for logic and I/O pins
			16	5V									
			17	3V3							10/26/38/57	VDD	Positive supply for peripheral logic and I/O pins (see also IC Pin 57 below)
			18	GND							9/25/41	Vss	Ground reference for logic and I/O pins
			19	AVSS							20	Avss	Ground reference for analogue modules
			20	3.3V_AVCC							19	AVDD	Positive supply for analog modules. This pin must be connected at all times.

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			Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description	
UEXT	10		Input/Output 32 (added to digitalw.c in trunk r242)	UEXT_#CS	Pin 32	5	0x01	0	RF0	58	RF0	PORTF is a bidirectional I/O port.	
									RB5	11	RB5	PORTB is a bidirectional I/O port.	
											AN5	Analog input channel 5	
											CN7	Change notification input 7.	
											VBUSON	USB Host and OTG Bus Power Control Output	
											C1IN+	Comparator 1 Positive Input	
ICSP	5								RB6	17	RB6	PORTB is a bidirectional I/O port.	
											AN6	Analog input channel 6	
											OCFA	Output Compare Fault A Input.	
											PGEC2	Clock input pin for programming/ debugging communication channel 2	
	4								RB7	18	RB7	PORTB is a bidirectional I/O port.	
											AN7	Analog input channel 7	
											PGED2	Data I/O pin for programming/ debugging communication channel 2	
				Analog input 4 Linked via 33R resistor to CON2 ANALOG:A4					RB8	21	RB8	PORTB is a bidirectional I/O port.	
											AN8	Analog input channel 8	
											U2CTS	UART2 clear to send.	
											C1OUT	Comparator 1 Output	
				Analog input 5 Linked via 33R resistor to CON2 ANALOG:A5					RB9	22	RB9	PORTB is a bidirectional I/O port.	
											AN9	Analog input channel 9	
											C2OUT	Comparator 2 Output	
											PMA7	Parallel Master Port Address etc	
			USB_FAULT						RB15	30	RB15	PORTB is a bidirectional I/O port.	
											AN15	Analog input channel 15	
											OCFB	Output Compare Fault B Input.	
											CN12	Change notification input 12.	
											PMA0	Parallel Master Port Address etc	
											PMALL	Parallel Master Port Address Latch Enable low-byte (Multiplexed Master modes).	
USB	ID								RF3	33	RF3	PORTF is a bidirectional I/O port.	
											USBID	USB OTG ID Detect	
	V BUS								RF2 ?	34	VBUS	USB Bus Power Monitor	
											RF2 ?	PORTF is a bidirectional I/O port.	

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			Main function	Alternate function	IDE "pin"	port mask	pin mask	= Bit		IC Pin No	IC Pin Name	Description
										35	VUSB	USB Internal Transceiver Supply. If the USB module is not used, this pin must be connected to VDD
USB	D-								RG3	36	RG3	PORTG input pins.
											D-	USB D-
	D+								RG2	37	RG2	PORTG input pins.
											D+	USB D+
									RC12	39	RC12	PORTC is a bidirectional I/O port.
											CLKI	External clock source input. Always associated with OSC1 pin function.
											OSC1	Oscillator crystal input. ST buffer when configured in RC mode; CMOS otherwise.
									RC15	40	RC15	PORTC is a bidirectional I/O port.
											CLKO	Oscillator crystal output. Connects to crystal or resonator in Crystal Oscillator mode. Optionally functions as CLKO in RC and EC modes. Always associated with OSC2 pin function.
											OSC2	Oscillator crystal output. Connects to crystal or resonator in Crystal Oscillator mode. Optionally functions as CLKO in RC and EC modes.
									RC13	47	RC13	PORTC is a bidirectional I/O port.
											SOSCI	32.768 kHz low-power oscillator crystal input; CMOS otherwise.
											CN1	Change notification input 1.
									RC14	48	RC14	PORTC is a bidirectional I/O port.
											SOSCO	32.768 kHz low-power oscillator crystal output.
											CN0	Change notification input 0.
											T1CK	Timer1 external clock input.
										56	VCORE/ VCAP	Capacitor for Internal Voltage Regulator
										57	ENVREG	Enable for On-Chip Voltage Regulator